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Claims

1. Dynamoelectric machine with a closed interior cooling circuit and heat exchanger within a heat exchanger housing,

   characterized in

   that the heat exchanger is in the form of a plate heat exchanger (6), wherein the exchanger plates (6) are mutually separated by spacers (7) which have been incorporated on one or both sides into the exchanger plates (6) by a stamping process, specifically, by deep-drawing.

2. Dynamoelectric machine according to Claim 1, characterized in that the plate heat exchanger is a gas-gas heat exchanger, specifically, an air-air heat exchanger.

3. Dynamoelectric machine according to Claims 1 or 2, characterized in that the flow path for the secondary cooling medium flow runs parallel to the rotor of the dynamoelectric machine.

4. Dynamoelectric machine according to one of the foregoing claims, characterized in that the flow paths for the medium flows are conducted in a cross-flow pattern within the heat exchanger.

5. Dynamoelectric machine according to one of the foregoing claims, characterized in that the plate heat exchanger is composed of a plurality of modules (42).

6. Dynamoelectric machine according to Claim 5, characterized in that the modules (42) are arranged adjacent to one another in a direction parallel to the rotor of the dynamoelectric machine.

7. Dynamoelectric machine according to Claim 6, characterized in that the flow paths for the primary medium flow through the modules (42) run radially relative to the rotor of the dynamoelectric machine.

8. Dynamoelectric machine according to Claims 6 or 7, characterized in that the flow paths for the primary medium flow through the modules (42) are separated from one another.

9. Dynamoelectric machine according to one of the foregoing claims, characterized in that air guides are provided between the stator of the dynamoelectric machine and the plate heat exchanger.

10. Dynamoelectric machine according to one of the foregoing claims, characterized in that the dynamoelectric machine is a machine having a double-pass interior cooling circuit, wherein the cooling medium flows out of the dynamoelectric machine and through the heat exchanger in the center region (32) of the plate heat exchanger (29), is then diverted in an adjacent space within the heat exchanger housing, and flows back again into the dynamoelectric machine through peripheral regions (33) of the heat exchanger.

11. Dynamoelectric machine according to one of the foregoing claims, characterized by a fan impeller (38) located directly on the shaft (36) of the dynamoelectric machine, or by a separate fan (40).

12. Dynamoelectric machine according to one of the foregoing claims, characterized in that the exchanger plates (6) are connected to each other at the contact points of the spacers (7) by spot welding, adhesive bonding, riveting, or soldering/brazing.

13. Dynamoelectric machine according to one of the foregoing claims, characterized in that in addition to the stamped sections for the spacers (7), additional stamped sections are incorporated so as to increase the active heat exchanger surface and/or to increase turbulent air mixing.

14. Dynamoelectric machine according to one of the foregoing claims, characterized in that additional air fins are incorporated into the individual exchanger plates, or are attached to these plates.

15. Dynamoelectric machine according to one of the foregoing claims, characterized in that the exchanger plates (6) are designed so that the connection points for the exchanger plates (6) are able to be aligned relative to each other by rotating the individual exchanger plates (6) by 90° or 180° about an axis perpendicular to the plate plane, and/or by rotating them by 180° about an axis in the plate plane.

16. Dynamoelectric machine according to one of the foregoing claims, characterized in that the outer edges of the exchanger plates (6) have folds (11) with an angle of preferably between 15° and 60° which due to the spacing of the stamped spacers (7) touch each other when the exchanger plates (6) are stacked.

17. Dynamoelectric machine according to Claim 16, characterized in that the exchanger plates (6) are connected at the folds (11) by flanging or welding or riveting or adhesive bonding.

18. Dynamoelectric machine according to one of the foregoing claims, characterized in that the modules (42) are connected and sealed at their outer edges or connecting edges by L-shaped or U-shaped sheet-metal sections (16) having sealing strips (17) which are preferably inserted in appropriately provided recesses in the individual modules.

19. Dynamoelectric machine according to one of the foregoing claims, characterized in that the entire heat exchanger is enclosed and sealed at its outer, initially open, edges by L-shaped (16) or U-shaped (16) sheet-metal sections with sealing strips (17) which are preferably attached in appropriately provided recesses.

20. Dynamoelectric machine according to one of Claims 9 through 11, characterized in that the heat exchanger modules are held together through the provided U-shaped sheet-metal sections (16) and/or L-shaped sheet-metal sections (16) by a frame or using threaded rods (18) and self-locking nuts (21).

21. Dynamoelectric machine according to one of the foregoing claims, characterized in that additional guides (39) for the cooling medium flow are provided in the housing of the cooler for the primary cooling circuit, and/or in the region of the cooling medium inlet and/or cooling medium outlet of the secondary cooling medium.